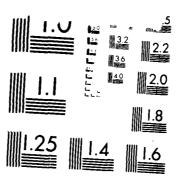
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NAVAL WEAPONS STATION SEAL BEACH FLEET MOORINGS INSPECTION REPORT

SEPTEMBER 1984

*Original contains color plates: All DTMC reproductions will be in black and

OCEAN ENGINEERING
AND CONSTRUCTION PROJECT OFFICE
CHESAPEAKE DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
WASHINGTON, DC 20374

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Two buoys, Oscar5 and Oscar 7, are listing about 45 degrees and could be taking on water. Since these two buoys could be in danger of sinking, they should be brought ashore as soon as possible and the cause of the lists determined and corrected.

Detailed information and specific comments concerning each of these moorings are included within this report.

ABSTRACT

This report contains the results of inspection of 12 fleet moorings (15 buoy systems) located within the NWS Seal Beach, California; harbor complex. A CHESNAVFACENGCOM-assigned Engineer-in-Charge and divers from Underwater Construction Team Two conducted the inspection from 30 July to 2 August 1984.

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U.S. NAVAL WEAPONS STATION (NWS) SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT

1.0 INTRODUCTION

- 1.1 <u>Background</u>. Under the COMNAVFACENGCOM Fleet Mooring Maintenance (FMM) Program, CHESNAVFACENGCOM has been assigned the responsibility to plan and conduct periodic diver inspections of all fleet moorings worldwide. In carrying out this responsibility, CHESNAVFACENGCOM designated an Engineer-In-Charge (EIC) to provide inspection planning and onsite technical direction for the underwater inspection of fleet moorings at NWS Seal Beach. The actual underwater portion of the inspection was performed by divers of Underwater Construction Team Two (UCT TWO). The inspection of these moorings was conducted from 30 July to 2 August 1984.
- 1.2 <u>General Description</u>. The NWS Seal Beach operates and maintains a total of 12 fleet moorings (15 buoy systems), all of which are located within the NWS Harbor Complex. Figure 1 depicts the geographic position of each of the 12 moorings. Eight, designated Oscar 1 through Oscar 8, are installed in the outer harbor, but inside the east and west jetties. Three of these are located to the west of the main entrance channel and five to the east of the channel. The remaining four fleet moorings are located in Anaheim Bay, the inner harbor located within two beach fill areas. Two of these are comprised of a three buoy system, designated Echo 1 through Echo 3, which are installed in the southwestern portion of Anaheim Bay. The final two, which are bow/stern moorings, are designated buoy systems Alpha 1 through Alpha 4 and are located in the eastern portion of Anaheim Bay.
- 1.3 <u>Mooring Classifications</u>. Based on the original wire diameter of the chain installed, these moorings meet the requirements of either a Class B or Class C mooring system. However, in actuality, these moorings are used by NWS Seal Beach personnel as Class E and Class F moorings. Table 1 depicts both the as-built and as-used classifications of each of these moorings.

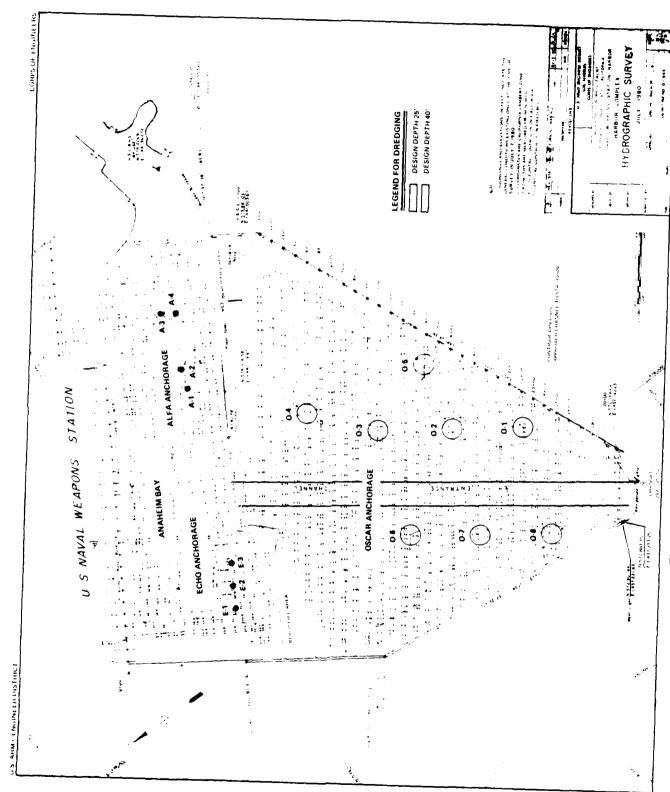


Figure 1. Seal Beach Mooring Geographic Locations

TABLE 1

NWS SEAL BEACH MOORING CLASSIFICATIONS

W0007N0	AS-BUILT	AS-USED
MOORING	CLASSIFICATION	CLASSIFICATION
01	С	É
02	С	E
03	С	Е
04	В	E
05	В	Е
06	В	Ε
07	В	E
08	В	E
El	В	F
E2	С	F
E3	В	F
A-1	В	Ε
A-2	В	Е
A-3	С	Ε
A-4	С	E

2.0 INSPECTION PROCEDURES

- 2.1 <u>Inspection Objectives</u>. The purpose of the mooring inspections was to determine the general condition of the buoys and chain assemblies and, when possible, to verify or update existing as-built and maintenance records. Divers inspected only a portion of the submerged buoy hull and chain assemblies in order to compile a general description of the mooring's condition. The existence of fairly consistent measurements during this inspection provides a good indication of the mooring's overall condition. It should be kept in mind that periodic underwater inspections are intended as an expedient and relatively inexpensive supplement to accurate maintenance records.
- 2.1.1 Chain Wire Diameter Measurements. Chain wire diameter measurements were used to evaluate the condition of a mooring. A selective sampling of the wire diameter of chain links and connecting hardware was taken in order to determine the amount of deterioration due to corrosion and wear. At each sampling area, the chain was cleaned to bare metal. Single-link measurements were taken where the chain was slack to detect corrosion loss. Double-link measurements were taken where two links connected under tension to detect the combined effects of corrosion and wear. Chain links and other components which measured 90 percent or greater of original wire diameter are considered to be in "good" condition; measurement between 80 and 90 percent of original diameter is considered "fair" condition; any measurement less than 80 percent is considered "poor" and is cause for the mooring to be declared unsatisfactory for fleet use.
- 2.1.2 <u>Inspection Limits</u>. Standard underwater inspection procedures do not call for the inspection of any part of the mooring which has been buried or which is below a water depth of 130 feet if scuba gear is used. Anchor chain and riser subassemblies were observed only to the point at which they became buried; no attempt was made to locate and inspect anchors or other mooring materials which were not readily visible.

2.2 Buoy

2.2.1 <u>Buoy Topside</u>. Each buoy was inspected to determine its general condition. The buoy markings were checked for conformance to those noted in applicable charts. Physical damage such as holes, dents, or listing was described. Hatches, openings, and penetrations were examined and worn material and rust were reported.

The buoy fenders and chafing strips were checked for integrity and secure connection to the buoy. Buoy top jewelry was measured with calipers to find the overall outside dimensions and areas of most severe reduction in wire size.

- 2.2.2 <u>Buoy Lower Portion</u>. Divers inspected the buoy below the waterline, recorded the thickness of marine growth, and noted the condition of the buoy bottom.
- 2.3 <u>Riser Chain Subassembly</u>. To determine chain wear, each riser chain was inspected by taking three consecutive double-link measurements at both ends and at the center of the riser, using precut guages and/or calipers. To determine original chain size, divers took single-link measurements of the wire diameter and measured the link length (link length should be six times the wire diameter).
- 2.4 <u>Anchor Chain Subassembly</u>. Using pre-cut gauges and calipers, UCT TWO divers took sample measurements of these subassemblies. Most of this chain was found to be in satisfactory condition.

3.0 INSPECTION SUMMARY

An in-depth discussion of the inspection results is contained in Annex A; Annex B contains buoy location survey data; Annex C contains onsite photographs; and Annex D contains a copy of the preliminary report of the inspection results. An evaluation of the information gathered during the inspection indicates the following:

- o Of the 15 buoy systems inspected, one (Oscar 7) was found to be in good condition. Four buoy systems are in unsatisfactory condition because some of the top jewelry and padeyes are less than 80 percent of original wire diameter and must be replaced before these moorings can be returned to service. These moorings are Oscar 2, 3, and 4 and Alpha 2. Table 2 presents the current status of NWS Seal Beach fleet moorings.
- o Buoys Oscar 5 and Oscar 7 are listing badly. One or more compartments of these buoys could be taking on water and the buoys could be in danger of sinking. These buoys should be brought ashore as soon as possible and the cause of their lists determined and corrected.
- o Buoys Oscar 1 and 8, Echo 1, and Alpha 3 are in fair condition due to rust and general deterioration and should be refurbished.
- o The top tension bar eye of buoy Alpha 4 is worn to almost 80 percent of its original wire diameter. This tension bar should be repaired as soon as practical. Any further wear may reduce the eye to below 80 percent and render the mooring unsatisfactory for fleet use.
- o Anchor chain subassembly A of mooring Alpha 2 is worn to less than 80 percent of its original wire diameter. This subassembly is unsatisfactory and should be replaced before this mooring is returned to service.
- o Moorings Oscar 6, Echo 2 and 3, and Alpha 1 have riser and/or anchor chain assemblies worn to within 80 and 90 percent of their original wire diameters. These moorings, however, are in satisfactory condition for continued use in their current capacity as Class E or F moorings.
- o Most of the anodes observed have eroded considerably. Plans should be made to replace these anodes in the near future.

TABLE 2

NWS SEAL BEACH INSPECTION SUMMARY

Mooring	Cor	nditio	on	
Number	Good	Fair	Poor	Comments
Oscar 1		Х		Buoy needs to be refurbished.
Oscar 2			Х	Top jewelry badly worn. Top tension bar padeye worn to about 50 percent of original size.
Oscar 3			Х	Top tension bar padeye and attached spider plate worn to 50 percent of original wire diameter.
Oscar 4			х	Top tension bar padeye and attached spider plate worn to less than 80 percent.
Oscar 5		Х		Buoy needs to be refurbished. Riser chain worn to between 80 and 90 percent. Buoy listing badly.
Oscar 6		• х		Anchor chain subassembly B worn to between 80 and 90 percent.
Oscar 7	X			Buoy listing about 45 degrees. The cause of this list should be investigated. Visible chain in good condition.
Oscar 8		Х		Buoy needs to be refurbished.
Echo 1		Х		Buoy needs to be refurbished.

TABLE 2 (cont'd)

NWS SEAL BEACH FLEET INSPECTION SUMMARY

Mooring	Cor	nditio	on.	
Number	Good	Fair	Poor	Comments
Echo 2			х	Riser and anchor chain assemblies worn to between 80 and 90 percent. Prior inspection measured anchor assemblies below 80 percent.
Echo 3		χ1		Anchor chain subassembly worn to between 80 and 90 per- cent.
Alpha l		Х		Riser and anchor chain subassemblies worn to between 80 and 90 percent.
Alpha 2			Х	Top tension bar padeye badly worn. Anchor chain subassembly A worn below 80 percent.
Alpha 3		Х		Buoy needs to be refurbished.
Alpha 4		Х		Top tension bar eye worn to almost 80 percent.

Although the buoy and riser chain subassembly were found to be in good condition, the three anchor chain subassemblies are buried and inaccessible to divers. Since the anchor chain subassemblies of moorings, Echo 1 and Echo 2 (which were installed at the same time as Echo 3) are worn, it is assumed that the anchor chain subassemblies of Echo 3 are probably in similar condition which justifies reducing Echo 3 to a "fair" condition.

ANNEX A

MOORING INSPECTION RESULTS

This annex contains the following for each mooring:

- o a summation of the inspection data obtained by the CHESNAVFACENGCOM EIC and the UCT TWO divers; and
- o a diver data reporting form.

OSCAR ONE

Buoy

This is a 10-foot-diameter drum-type buoy with a tension bar and a 5-foot freeboard. The top and bottom fenders and the chafing rail are made of timber which is badly deteriorated. The buoy's top and bottom hardware appear to be in satisfactory condition, but the sides of the buoy are covered with a light rust.

Riser Chain Subassembly

The original wire diameter of the riser chain was 2 3/4 inches, much larger than that required for a Class E mooring. Double-link measurements, taken at the top, middle, and bottom of the riser chain, indicate that the chain links are greater than 90 percent of their original wire size. The ground ring was located at a depth of 30 feet, near the bottom under the tidal condition existing at the time of this inspection.

Anchor Chain Subassemblies

These three subassemblies are buried in the bottom and are not available for visual inspection.

Cathodic Protection

Underwater voltmeter readings measured the cathodic protection to be between ~.89 volts on the buoy and -.65 volts on the riser chain near the ground ring.

Conclusions/Recommendations

The buoy needs to be refurbished, but the mooring is in satisfactory condition for continued use in its current capacity as a Class E mooring.

MOORING NO.: OSCAR 1 CLASS:	LOCATION: L'11'S SEAL BEACH LAT	LAT: 33" 43" 41 9 LONG: 1/8" C5" 52, 1"
BUOY TYPE: DELTI (16 DALL) ANCHOR SIZE/TYPE: A'I	A'E WATER DEPTH: 33' VISIBILITY: 2' BOTTOM TYPE: SILT/SALD	2 BOTTOM TYPE: SILT STALD
DATE: 31 JLLY 84 ENGINEER-IN-CHARGE: J. A. THURLITOR		DIVERS. MARDING /MAKIN (0521-0847 HRS)

						COND	CONDITION				
O	COMPONENTS	GAUGE	LINK	SIN	SINGLE LINK %	% X,	noc	OOUBLE LINK %	i l	DEPTH	COMMENTS
			LENGTH	+06	+08	-08	+06	80÷	-08		
76%	54.14" PAIS EYE								CPS		Buy HAS TENSICK BACALD
	2" STYDER PLATE										SITS HIGH IN WATER, 5'OF
ЯАН	1 4" PEAR (2)								-,89		FREERIARD, PLUY 15 COVERED
Berter	Betterl-3" DETACH										WITH LIGHT RUST CL SIDES.
	21/3" SHACKLE										TOP DECK 4A5 LIGHT GIALO
	NEAR BUOY	234"	16.2	111		-	111		5:8:-	` %	8' COVER, IVEND FRADENS POUNFILE
RISER	MIDDLE			11/1			11/1/			181	18' KALLS BIDLY DETER LEWNTED.
	NEAR GRD RG	->	\rightarrow	111			1111		-,65 27	120	
GRC	GROUND RING	412,	× 18'	"IUSID	E DIA	WINDE DIAMETER	Ê		69:-	30'	69 30 AXESSORIES BETWEEK RISER CHAIM
Coo	UPPER END					i					AND EREVED FINE - 234 DETACH
LEG	MIDDLE	BURIED	IED								2/2"81WK 2/2"01WK 3 WACC
¥	ENTERS BOTTOM										DETACH
GROUND	UPPER END										
LEG	MIDDLE	1311	(171								
	ENTERS BOTTOM										ALL ANCHER LEG STATISTER STATE
CINITIONS	UPPER END										RURIED
LEG	MIDDLE	131.6/E	1ED				•				
ر ا	ENTERS BOTTOM										

FOR ADDITIONAL LEGS USE OTHER SHEETS

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SHEET

OSCAR TWO

Buoy

This is a 10-foot-diameter peg-top buoy with a 42-inch freeboard. The fenders and chafing strip are rubber and in good condition. The sides and top deck are covered with moderate to heavy rust and the top jewelry is badly worn and in poor condition. In addition, the top padeye of the tension bar is worn to about 50 percent of its original 3-inch wire diameter.

Riser Chain Subassembly

Double-link measurements of this chain were between 80 and 90 percent of the original 2 3/4-inch wire diameter which is considerably larger than required for its use as a Class E mooring.

Anchor Chain Subassemblies

About 2 feet of each of the three subassemblies was visible before they entered the bottom. The upper end of each of these subassemblies was measured to be greater than 90 percent of its original wire diameter.

Cathodic Protection

Underwater voltmeter readings measured the cathodic protection to be between -.82 volts on the buoy to -.69 volts at the upper end of anchor chain subassembly B.

Conclusions/Recommendations

Due to the poor condition of the top jewelry and upper padeye, this mooring is considered to be unsatisfactory for further fleet use. This mooring should be removed from service and overhauled at the nearest practical time.

BOTTOM TYPE, SILT SALIS LAT: 35 43 45,31/LONG: 118 65 46 6 W 1056 - 1144 HRS VISIBILITY: 2 DIVERS: HARDIL'E IFIALL LOCATION: LIL'S STAL BEACH · WATER DEPTH: 39 DATE: 31 JULY 84 ENGINEER IN CHARGE: J. A. THEIDLY TELL! BUOY TYPE: FEE TOP (K' DINH) ANCHOR SIZE / TYPE: U MOORING NO.: C'SCAR 2 CLASS:

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						COND	CONDITION				
CON	COMPONENTS	GAUGE	LINK	SIN	SINGLE LINK %	NK %	noa	DOUBLE LINK %		DEPTH	COMMENTS
			LENGTH	+06	÷08	-08	÷06	\$0+	-08		
	CF-3" PADEYE								CPS		BULY HAS 3' REEFENARD MODERATE
	315" SHACKLE								£.8		TO HEAVY RUST ON SIDKS AND THE
A PATTO	RUTCH- 3" B LUK										DECK, FELDERS PONDING RAILS
۸٥	3" (1/21)										(RIBBER) GUED QUIDITHER! TEN
N8	2 % "DETACH										HARDICARE IN PLOE CLUSITER.
	NEAR BUOY	234"	, 7, 21	111				111	18:-	,8	8' MARKE WURD TO 50%, HEAVY
RISER	MIDDLE			,1,1,1				11/	-,79	22,	79 22' REST CW CHAFAGE RAIL CLIPS.
	NEAR GRD RG	\rightarrow	→	11/1			///		72	37,	-72 37' HODEPATE RUST CH. BUY ENGES
GRC	GROUND RING	4%"	b! X	12:51	DE O	INSIDE CHARETER	TER.				HOUSERPLES DETWIEW PIST CHAIL
Bene	UPPER END	2/2	,51	11,1,1					-77	40.	AND GRUND KING-343" DSTACH, 315" 6
LEG	MIDDLE										LINX, 35"C LINK 34" SINGLE.
NO. A ©	ENTERS BOTTOM										2'LEG. A VISIBLE PERCE BITTEN.
BROUND GROUND	UPPER END	275"	15"	1/1					69.	39'	39' 64440 Pare To 1665 1/140 6-313"
LEG	MIDDLE										SHIPKLE 3 13 "C LINK 3 15" DETHOU(3)
210	ENTERS BOTTOM										DIEG BVSIBLE
6801MG	UPPER END	2%"	15"	11/1/2					-,72	1,07	-,72 40' GREWY END TO 166 6-3" SHIPOLLE
1.EG	MIDDLE										3 NANO DETACH 2 2" IN INCH
180°C	ENTERS BOTTOM										2' LEG C' VISIBLE

FOR ADDITIONAL LEGS USE OTHER SHEETS

A-5

OF

SHEET

OSCAR THREE

Buoy

This is a 12-foot-diameter peg-top buoy with a 42-inch freeboard. About 25 percent of its wooden fenders and chafing strip are badly deteriorated, and there is a light coating of rust on the sides near the waterline. The top tension bar padeye and attached spider plate are both worn to less than 50 percent of their original wire diameter. There is about 5 inches of marine growth on the bottom of the buoy.

Riser Chain Subassembly

Double-link measurements of the upper portion of the riser chain were between 80 and 90 percent of its original wire diameter. Several fishing lines were intertwined with the riser.

Anchor Chain Subassemblies

Approximately 5 feet of each subassembly was visible before the chain entered the bottom. Double-link measurements of these chains were between 80 and 90 percent of their original wire diameter.

Cathodic Protection

Two anodes, about 40 percent of their original size, were located on the buoy. Underwater voltmeter readings measured the cathodic protection to be between -.80 volts on the buoy to -.62 volts on the lower portion of the riser chain subassembly.

Conclusions/Recommendations

Due to the poor condition of the top jewelry and padeye, this mooring is in unsatisfactory condition for further fleet use. This mooring should be removed from service and overhauled at the earliest practical time.

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19 61	SILI	153
NG: /	TYPE	9-1
01 <u>۷/</u>	rtom	144
3,20	- B 0-	7
33.4	2	N'E
LAT: 33°43'56.11/2 LONG: 118 25'42.6"	T Y:	000
,	SIBILI	2
H J	×	77
17.7	42	5.
LOCATION: 1/20 STAL PEACH	WATER DEPTH: 42 VISIBILITY: 2 BOTTOM TYPE: SILT/JACD	DIVERS. SAKO/CICCONE (1449-1538 HKS)
3.6	I DEP	ă
5:2	АТЕВ	7
13	S	16.
TION:	H	OFA
LOCA	7	7
	ANCHOR SIZE/TYPE:	J.A
E	/TYPE	3GE:∑
	SIZE	CHAF
	снов	ER.IN
CLA	AN	GINE
,,	c	EN
SAK	150	2
MOORING NO.: $\overline{C_{\lambda''}eta C_{\lambda''}}$ CLASS:	BUOY TYPE: PEG. TEP	DATE: 31 JLLY 84 ENGINEER-IN-CHARGE: J.A. THORLTCL!
ON 5	rPE:	31.
NINO	0Y T)	TE:
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						COND	CONDITION				
CO	COMPONENTS	GAUGE	LINK	SIN	SINGLE LINK %	% X7	DOO	DOUBLE LINK %		ОЕРТН	COMMENTS
			LENGTH	+06	+08	-08	+06	\$0+	-08		
	COP 3 PADEXE								CP 5.		BUCY 4105 36" FREEKYARD, SODER
	3 SPINE PHIE								80		PLATE AND TOP PADEYE WORK TO
A Petter	Petten-34" Detrien								82		50% AlerT 4 OF RINO FLA DEUS JEHNE INC
٨٥	3%" PEAR										STELYS IN GEED (BYDINGE; LIGHT PEST
ВO	2 %" DETHUM										CK SIDES AT WATER INE MIRULE CONST
	NEAR BUOY	234"	7,91	1111				, 1,1,	-65	· %	S WESTER FISHIE LILES INTERNAN
RISER	MIDDLE			11/1			14/1		63-	23'	33' WITH RISER, THE AMEDE 43:1 x 3 "x 3")
	NEAR GRD RG	\rightarrow	\rightarrow	111			17,1,1		-62	38,	186 40% OF ORIGINAL SIZE CK BUSY
GRC	GROUND RING	515"	×1512	16,71	X DI	INSIDE DIAMETER	3			38,	ACCESSALIES BETWEEL RISER CHAIL
902/9	UPPER END				11/1			1,4,4			HLD 612411 PILG - 34" DE 105H 312
LEG	MIDDLE										ENDLINK, 3" CLINK, 4" NHOO DETHIN.
STO.	ENTERS BOTTOM										
/35.206 GROUND	UPPER END			111				1/1/1		431	
LEG	MIDDLE										GROUND PHIG TO EMMIEG - 1"
14,	ENTERS BOTTOM										AACO DETACH 3 4" 17 AR LIAK
SACAL GROUND	UPPER END			1,1,1				1.00		42,	43' 2'4" DFIACH
LEG	MIDDLE										HLL THELE LEGS FATER BYTHE
277.	ENTERS BOTTOM										5' FROM CROWN KING

FOR ALIDITIONAL LEGS USE OTHER SHEETS

CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

PF

SHEET

OSCAR FOUR

Buoy

This is a 10-foot-diameter peg-top buoy with a 4-foot freeboard. The buoy's edges have moderate to heavy rust, and 3 to 4 inches of marine growth on the bottom. The rubber fenders and chafing rail are in good condition. The top tension bar padeye and attached spider plate are worn to 71 and 58 percent, respectively, of their original wire diameters.

Riser Chain Subassembly

Double-link measurements taken near the middle of the riser chain were between 80 and 90 percent of original wire diameter. Otherwise, all readings were greater than 90 percent.

Anchor Chain Subassemblies

Approximately 15 feet of each of these subassemblies was visible before the chain entered the bottom. Measurements taken of the upper end of each chain were greater than 90 percent of original wire diameter.

Cathodic Protection

Two anodes, about 50-75 percent depleted, were located on the buoy bottom. Underwater voltmeter readings measured the cathodic protection to be between -1.01 volts at the buoy anode to -.69 volts on the riser chain near the ground ring.

Conclusions/Recommendations

Due to the badly worn condition of the top jewelry and upper padeye, this mooring is considered to be unsatisfactory for continued fleet use. This mooring should be removed from service and overhauled at the earliest practical time.

LAT: 33 43/54.4/LONG: 115 65 375 16 WATER DEPTH: 4C VISIBILITY: 1 BOTTOM TYPE: SILT STAND (0750 - CS.44 HRS) DIVERS: MAKIN / PHELPS LOCATION: KILLS SEAL BEACH DATE: 1 ALC 1934 ENGINEER IN CHARGE: J. A. THORNTON BUOY TYPE (EL T.P (10 MICHOR SIZE/TYPE: AL MOOHING NO. CTUBE 4 CLASS:

13.55

						COND	CONDITION				
00 	COMPONENTS	GAUGE	LINK	SINC	SINGLE LINK %	1K %	DOO	DOUBLE LINK %		DEРТН	COMMENTS
		1	LENGTH	+06	\$0¢	-08	÷06	\$0¢	-08		
77	F. 312" PADEYE								CPS VC:TS		BUCY(5/4 AL) HAS 4 (TEC BEARD AND
	3 SHDER						7	(hir.y)	-87		SLIGHT LIST, HEDERATE TO HEAVY
AAH Setter	BUTTON 4" DETACH						-3	ANIDE -1,01	10%		RUST ON EDGES, PADETT WERE TO
	3/2 SWAKELE PRAR										312 " SPIDER TO 134" REWELL FEWERS
าย	234" DEIKH										AND CHAFING RAIL GOOD COUDITIEN
	NEAR BUOY	3/2"	15"	111/			11/			,8	HARINE GERWTH 3-4"OR BITTLY, The
RISER	MIDDLE			111				11/1	48'-	15.1	15 MOY BLODES (34, 3, x3,) 50-75%
	NEAR GRD RG	\	À	1.1.1			111/	·	67'	38'	38 EXPENDED, MED RUST ON TOP.
GRC	GROUND RING	•								40,	40' ACCESSERES BETWEEN RISER CHAIR
6826	UPPER END		15"	11/1			11/1				ALD Stayed RING - 3 "2" DETACH
LEG	MIDDLE									·	3 74" BILLY 3 14" CINK 3 14"
0 00.7	ENTERS BOTTOM										N'ACO DETACH.
SCL'6- GROUND	UPPER END		112 "	1/5//			1111				
LEG	MIDDLE										Auchor SubASSEABLY A ELTERS
000/	ENTERS BOTTOM	_									DOTTON 3' BELLIN GREIND KING.
Beke	UPPER END			/;//			1/21/2				ANCHURSBASSEMBLIES BANDC
LEG	MIDDLE		1.5.11								EACH ENTER THE POTTON 15 FROM
305	ENTERS BOTTOM										THE GROUND RING

FOR ADDITIONAL LEGS USE OTHER SHEETS

CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

SHEET

OSCAR FIVE

Buoy

This is a 10-foot-diameter peg-top buoy which is listing badly (40-50 degrees). About 20 percent of the wooden chafing strip is badly deteriorated and the two wooden fenders are in poor condition. The sides of the buoy are covered with moderate to heavy rust and the top jewelry is covered with heavy rust. The buoy bottom has 4 inches of marine growth.

Riser Chain Subassembly

One double-link measurement of the riser chain near the ground ring was between 80 and 90 percent of the original wire diameter. A wire rope is entwined with the riser chain. The ground ring was located at a depth of 30 feet.

Anchor Chain Subassemblies

All three subassemblies are buried and could not be inspected.

Cathodic Protection

Underwater voltmeter readings measured the cathodic protection to be between -.69 volts on the buoy to -.63 volts on the upper link of one of the anchor chain subassemblies.

Conclusions/Recommendations

This mooring appears to be in fair condition, but its use should be restricted until the buoy's list is investigated and the cause of this list corrected. In addition, the buoy needs to be overhauled and its fenders and chafing strip replaced.

MC	CHING N	MOGHING NO. CSGAK 5 CLASS.	CLASS		į,	01	CATION	37 T	3 5	LOCATION: A.W.S SEAL BEACH	3840	14 LAT: 35 43 44, 5 \$ LONG: 175 65 1917 12
08	OY TYPE	BUOY TYPE: \widetilde{I}	WANCH	OR SIZI	E/TYPE:		4.7	W	WATER DEPTH:_	ЕРТН	.36	ISIBILI
DA	TE: 3/	DATE: 31 544 84 EN	ENGINEER-IN-CHARGE: J. A. THORKITCL	-IN-CHA	RGE	L A	7410.	EL TO	(7	DIVERS	HAK	DIVERS: HAKDIKG/HALL (1218-1248 HE>)
							COND	CONDITION				
	CON	COMPONENTS	GAUGE	INK	SIN	SINGLE LINK %	× ×	DOO	DOUBLE LINK %		ОЕРТН	COMMENTS
			315		+06	+08	-08	+06	\$0¢	-08		
38,		OP-31 PANEYE 3"								CP -: V		Bucy LISTILG BADLY (45 56), CLUT SIL
AWQ		SPIDER 22 Sineel							(62.5)	7.64		CFURD CHAFING RALLIS SAT CERDINA
ЯАН		2 1/2 (A. P. P. A. L. 4)										TOP HILD FELDER IN PUR (EWDATICH, SV)
YOU	Romer	RTICH-2/2 SMAXIE 2"B										CF LIWER FEINER DETERNORATED,
าย		LUK 37 DETACH										PROGRATE TO HEAVY RUST CA SIDES
		NEAR BUOY	12/2"	15"	11/5/			/1/1/		-,66	,6	A WIRE ROPE 15 ENTHINED WITH
x	RISER	MIDDLE			1,1,1			1/1/1		77-		RISED CHAIN AND CHE LEG. HEAVY
		NEAR GRD RG	->	→	111			1,1	/1		36	RIST ON TOP SEWELLY BUY BUTA
	GRO	GROUND RING	472.	× 19"AUS.	CS.DE		DIAMETE	2/			30'	HAS 4"OF HARDOZ GRETH
70	ら Pいい	UPPER END								1,64		ACCESSIBLES BETWEEN RISERALLS
	LEG	MIDDLE	Bul	BURIED								CARNIND RING - 3"DETROPH 3"3" 13
اد. ع	10 C.C.	ENTERS BOTTOM										LINK, 2/2" CLINK, 4 NO. CO DETACH.
- 5	らな がら GROUND	UPPER END								-64		
	LEG	MIDDLE	BURED	ED								GREWAD RING TO EACH LEG - 3/3"
	170°	ENTERS BOTTOM						٠				N'ACE DETACH 3" 1 EAR 3" DETROIT
<u>~</u>	SPAIND GROUND	UPPER END								-63		
	LEG	MIDDLE	BIRDED	IED								MECHER CHAIN SUBDISEMBLIES BEIND
• •	350	ENTERS BOTTOM										BEKNIG, R. AWESSCRIES
F0.	R ADDITI	FOR ADDITIONAL LEGS USE OTHER SHEETS	THER SH	EETS								SHEET / OF /

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CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERNATER INSPECTION REPORT."

OSCAR SIX

Buoy

This is a 10-foot-diameter peg-top buoy with a 3-foot freeboard. Its rubber fenders and chafing strip are in good condition. The buoy's sides are covered with a light rust, and its upper padeye and fender clips are moderately rusted. The bottom of the buoy has about 4 inches of marine growth.

Riser Chain Subassembly

The riser chain was measured to be greater than 90 percent of its original $2\ 1/2$ -inch wire diameter. The ground ring was located at a depth of 38 feet.

Anchor Chain Subassemblies

About 5 feet of each subassembly was visible. Except for subassembly B, which measured between 80 and 90 percent, all measurements were greater than 90 percent.

Cathodic Protection

Two anodes, about 20 percent depleted, were observed on the bottom of the buoy. Underwater voltmeter readings measured the cathodic protection to be between -.96 volts at the anode and -.64 volts on the upper links of anchor chain subassembly A.

Conclusions/Recommendations

This mooring is in satisfactory condition for continued use in its current capacity as a Class F mooring.

MOORING NO.: CS2AE & CLASS. E LOCATION. LILY SEAL BEACH LAT. 37 43536" LONG. 1880. 377" A BUOY TYPE LICY (1c DIM) ANCHOR SIZETTYPE. A DATE: 31 JULY ST ENGINEER IN CHARGE. J. H. THORUTON COMPONENTS SIZE LINK SIZE SIN	- ,	S										
SCA SCA DE LIN BOLE L	LAT: 33 4353 61 LONG: 1/8 25 50 114	VISIBILITY: / BOTTOM TYPE: 5161/5927	KO/CICCOUE (1618-1648 HES)				BUCY HAS 3' FREEBUARD, RUBBER	FEDDERS/CHAFING PAIL IN GUND	CADITICAL HEHT RUST CH SIDES.	PROBRATE RIST AT PADEYE AND CH	UPPER FENDER CLIPS, IETTEM HASH")
SCA SCA DE LIN BOLE L	ACH	45,	54		DEPTH							,
SCA SCA DE LIN BOLE L	79 7	PTH:	DIVERS			-08	555	-96	-,84	-,85		
MOORING NO.: CSCAR & CLASS. E LOCATION. LILS SUOY TYPE: PETTY STATE OF THE SIZE TYPE. AT WAS DATE: 31 JILY STATE ENGINEER IN CHARGE: J. A. THORITON COMPONENTS GAUGE SIZE LINK A STADER A STAD	55.71	TER DE			BLE LIN	+08		ALCOE	(RUCY)			
MOORING NO.: CS24R & CLASS. E LOCATION SUOV TYPE. [E TCP (1c DIMMANCHOR SIZE/TYPE. AL SATE: 31 Jily 84 ENGINEER IN CHARGE. J. A. THOR COMPONENTS GAUGE LINK SINGLE LINK % SIZE LENGTH 90+ 80+ 80- E Tcp-3" PADER 3" SPDER 3" SPDER 5 2/3" SHACKLE D D D D D D D D D D D D D	1,415	WA	2700	TION	DOO	+06						/ ' /
MOORING NO.: CSUAR & CLASS. E LO SUOV TYPE (E TOP (16 DIAM) ANCHOR SIZE / TYPE. DATE: 31 JULY 84 ENGINEER IN CHARGE: J. A. COMPONENTS GAUGE SIZE LINK SIZE LINK SINGLE LIN SIZE LINK SINGLE LIN SIZE LINK SIZE LINK SINGLE LIN SIZE LINK SIZE LINK SINGLE LIN SIZE LINK SINGLE LIN SIZE LINK SINGLE LIN SIZE LINK SINGLE LIN SIZE LINK SIZE LINK SINGLE LIN SIZE LINK SIZE LINK SINGLE LIN SIZE LINK SINGLE LIN SIZE LINK SIZE LINK SINGLE LIN SIZE LINK SINGLE LIN SIZE LINK S	CATION	IN	140E	COND	% XI	-08						
MOORING NO. CSUAR & CLASS. E SUOV TYPE. [ECTOP (10 DIAM) ANCHOR SIZE TYPE DATE: 31 JULY 84 ENGINEER IN CHARGE: SIN COMPONENTS SIZE LINK SIZE LINK SIZE LINK SIZE A SPACKE A STARKE	10		S. A.		GLE LIN	\$0¢						
MOORING NO. CSCAR & CLASS. SUOV TYPE. [ECTOPOLICION ANCHOR SIZ DATE: 31 JULY 84 ENGINEER IN CHA COMPONENTS GAUGE LINK SIZE LENGTH A 3'SPACE A 3'SHACKLE B 3'SSHACKLE B 4'SSHACKLE B 5'SSHACKLE	E	E/TYPE	RGE		NIS	<u> </u>						/ /
MOORING NO.: CSCAR & CLASS SUOY TYPE. [ECTC (1c' DIAM) ANCH DATE: 31 Jily 84 ENGINEER COMPONENTS GAUGE SIZE 3" SPIDER A" STRICH 3" SHACKLE B 213" SHACKLE B 313" SHACKLE B 313" SHACKLE		OR SIZ	-IN-CHA		LINK	LENGTH						"
MOORING NO.: CSEAR & SUOV TYPE BE TOP (10'DIA DATE: 31 JULY 84 EN COMPONENTS COMPONENTS 3"SPIDER BUSTINH-3¼"DETRCH BUSTINH-3¼"DETRCH	CLASS	HANCH	GINEER		GAUGE							" "
5 4 4 1 1 1 1 1 1 1 1 1 1	MOORING NO.: CSEAR 6	BUOY TYPE (EC TOP (16 DIA)	DATE: 31 JULY 84 EN				, , ,		A RITTIH-3/4" DETACH		าย	

					-		-				
	Cof-3" PADEYE								555		BICY HAS 3 FREEBUARD, RY BRER
AWO	3"SPIDER						"	(ALCOE) - 96	-96		FENDERS/CHAFING PAIL IN GOOD
A RITTLY	TM-3/4 "DETACH				_		"	(BUEY) -, 84	-,84		Coupition! HAHT RUST CHESIDES.
401	2/3"SHACKLE								-,85		NOBERTE RUST AT PADEYE AND CH
าส											UPPER FENDER CLIPS, KTTCH HAS +"
	NEAR BUOY	2%"	15"	1/1//			11.11		-,82	· &c	8' CF MACINE GREWTH, PETTER FEREN
RISER	MIDDLE			11,11			11/1.1		-, 8.3	<i>:</i> 1	20 SHINY AND CLEAR, THE ALLORS
	NEAR GRD RG		-	1/1/1			111		- 8.2	35.1	-, 8.2 35" 36"x4" x4" CAD BELTY ROTTON (36%)
GRC	GROUND RING	5/4">	X15"	WSIDE DIAMETERS	DIA	METE	\ \?			38'	EXTENDED)
STRAIGHT	UPPER END	2/2		///			1/1/		-64	1,124	-64 Hr. ACCESSIBLE PETWEEN RIGGITHIN
LEG	MIDDLE						-				ALD GRUUD CING-1/3" DETAIN
NO A U.C. KITCH	אטזים איזנין ENTERS BOTTOM			111/			1,1,1			45,	45' 3/3"C LUK, 4" NACE DETACH.
Byte G	UPPER END			17.11				11.1	111/-17 40	,24	
LEG	MIDDLE										GELUND RING TO CACH PLACHUR CHAIR
150°C	ENTERS BOTTOM			11:11			1,1,1,1			45,	SUBASSIMBLY-4" NAW DETACH
SROUND GROUND	UPPER END			11/1/1			11/1		-14.	1411	-70 40 314" PEAR 234" DETACH,
LEG	MIDDLE										ABOUT 5'CF EACH ANCHOR CHAIN
30°C	ENTERS BOTTOM	-	-	1,1,1			1111			£.	45' SIBASEMBLY VISINLE.

FOR ADDITIONAL LEGS USE OTHER SHEETS

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CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

OSCAR SEVEN

Buoy

This is a 10-foot-diameter peg-top buoy. The buoy is listing badly (about 45 degrees). Its rubber fenders and chafing strip are in good condition. The side of the buoy with the least freeboard is covered with a light coating of rust.

Riser Chain Subassembly

Single- and double-link measurements of the riser chain were all greater than 90 percent of its original 2 1/2-inch wire diameter. The ground ring is buried.

Anchor Chain Subassemblies

The three subassemblies are buried and could not be inspected.

Cathodic Protection

Two anodes, about 20 percent depleted, were observed on the buoy bottom. Underwater voltmeter readings measured the cathodic protection to be between -.97 volts at an anode to -.74 volts at the lower section of the riser chain.

Conclusions/Recommendations

The mooring chain is in good condition, but the mooring's use should be restricted until the buoy's list is investigated and the cause of the list corrected.

WATER DEPTH: 45' VISIBILITY: / BOTTOM TYPE: 51LT/57/2/3 17.5-1753 HRS LAT: 33 73498 1 LONG: 1/8 25 35 1 W DATE: 30 JULY 84 ENGINEER IN CHARGE: J. A. THORK TON' DIVERS: CICCOUR / GRIFFIN LOCATION: L'IL'S SEAL BEACH I,V BUOV TVPE:[Ex TOP (10'01441)ANCHOR SIZE/TVPE:_ MOORING NO.: C'5C'AR 7 CLASS:

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						COND	CONDITION				
00	COMPONENTS	GAUGE SIZE	LINK	SIN	SINGLE LINK %	% XN	DOO	DOUBLE LINK %		DEPTH	COMMENTS
			LENGTH	+06	+08	80-	÷06	+08	-08		
7.27	TOP - 4" PADEYE								CPS		BUSY HETING AROT 45, RUBLICE
	3% SPIDEE 3 Shore	2						$(\sigma_{\rm tivy})$	-,87		FENDERS/CHAFING RAIL IN
ЯАН	(3) 3 4 PEAR(4)							`	78:-		Gens consisted, LIGHT RUST
	STEN-34" LAK DERY							1900 - (30 mg)	46.		ON SIDES, LIGHT GUAL COVERNO
	J'ITENE Y SOFTACE										OVER TOP DECK, They ALUDES IN
	NEAR BUOY	2/2"	15,	111			12/		58'-	-&	BUT 36"x 315"x 3/5" HARLIT
RISER	MIDDLE			11.17			11/1		<i>-</i> . 8 ک	30,	30% EXPENDED
	NEAR GRD RG	\rightarrow	1	11.7			1111		42,-	45,1	
GRC	GROUND RING	BiR	BURIED								
dividos	UPPER END										ALL THREE ALCHOR CHAIL
LEG	MIDDLE	131.18	VED.								SUBASSENBILES AND GRUND
MO. A	ENTERS BOTTOM	l									RING BURIED.
GROUND	UPPER END										
LEG	MIDDLE	B1.E	(131								
9.00	ENTERS BOTTOM										!
	UPPER END										
LEG	MIDDLE	80.E 1ED	(ED								
NO. C	ENTERS BOTTOM										

FOR ADDITIONAL LEGS USE OTHER SHEETS

OF.

SHEET

CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

OSCAR EIGHT

Buoy

This is a 10-foot-diameter peg-top buoy. It has light rust and pitting on its sides and moderate rust on the top hardware. The rubber fenders and chafing strip are in good condition. The bottom is covered with 4 to 5 inches of marine growth.

Riser Chain Subassembly

All single- and double-link measurements were greater than 90 percent of riser chain's original $2\ 1/2$ -inch wire diameter. The ground ring and lower portion of the riser are buried.

Anchor Chain Subassembly

These subassemblies are buried in the bottom.

Cathodic Protection

Two anodes, about 20 percent depleted, were observed on the buoy's bottom. Underwater voltmeter measured the cathodic protection to be between -.97 volts at an anode and -.79 volts on the riser near the mud line.

Conclusions/Recommendations

This mooring is in satisfactory condition for continued use in its current capacity as a Class E mooring. However, the buoy should be refurbished.

MOC	DRING N	MOORING NO. \vec{C}^{5CAR}	CLASS		H	07	CATION	11/	3	LOCATION: AMS SEAL DEALH	JEAN.	4 LAT: 33°43'457" LONG: (18°55'557"
900	Y TYPE:	BUOY TYPE (EE TO F (12 DIAM) ANCHOR SIZE IT	ANCH	IOR SIZ	E/TYPE:_		NI	Ä	ATER DI	WATER DEPTH: 42	42,	ISIBILI
DAI	TE: 32)	DATE: 36 JULY 84 ENGINEER IN CHARGE: J. A. THORY TOLL	NGINEER	I-IN-CHA	ARGE:	F. A.	THE	27.72	1	DIVERS	Cica	_ ^ i]
							COND	CONDITION				
	CON	COMPONENTS	GAUGE	T I	SIN	SINGLE LINK %	% %	DOO	DOUBLE LINK %		DEPTH	COMMENTS
			<u> </u>	LENGTH	÷06	+08	-08	÷06	80÷	-08	i	
38	Ter	FOP 3 PADEYE								5737		BUTY (Sh. 135) HAS LIGHT RUST ALD
AWO		3"SPIDER							(ALVOE)	-,97		PITTING ON SIDES. HONEWATE DIST
ЯАН	RUTTON	BUTTON 21" DETACH								76-		ON TOP HARDWARE, RUBBER FEWDERS
١٨٥١									(6001)-, 87	-, 8-7		CHAFING STRIP GOOD CONTROL!
B										-, 88		ABRIT 4-5"CF MAKINE GIBUTACK
		NEAR BUOY	2/2"	15"	1111			111		- 88	8,	Bucy Better (, The Minder
æ	RISER	MIDDLE			///			11/1		68'-	_	(36"x312") OBSFRIED,
		NEAR GRD RG	\rightarrow	\rightarrow	111			111		- 79	_	ARLIT DO 1/6 EXPERIBLED.
	GRO	GROUND RING	BiE	62								
		UPPER END										
LEG	LEG	MIDDLE	Birlen	EN								GENTO THE AND HIL HICHE
ž	NO. A	ENTERS BOTTOM	•									CHINK SYSHSENBLIFS PURIED
35	GROUND	UPPER END										
LE	LEG	MIDDLE	BIR	CLED								
	3	ENTERS BOTTOM										
_	GINITOGO	UPPER END										
LEG	January G.	MIDDLE	1219	031								
ž ——	NO. C	FNTERS BOTTOM										

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CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

FOR ADDITIONAL LEGS USE OTHER SHEETS

ENTERS BOTTOM

SHEET

ECHO ONE

Buoy

This is a 10-foot-diameter peg-top buoy with a 40-inch freeboard. Although its upper wood fender and chafing strip are in good condition, the lower fender is badly deteriorated. There is heavy rust on the sides of the buoy and on the top fender and chafing strip clips.

Riser Chain Subassembly

Single- and double-link measurements of the riser chain were all greater than 90 percent of its original $2\ 3/4$ -inch wire diameter. The ground ring was located at a depth of 40 feet.

Anchor Chain Subassembly

Only the top few links of each subassembly were visible before the chain enters the bottom. These links were also measured to be greater than 90 percent.

Cathodic Protection

Two anodes, each with about 40 percent of their zinc expended, were observed on the buoy. Underwater voltmeter readings measured the cathodic protection to be between -.96 volts at an anode and -.82 volts on the upper links of the anchor chain subassemblies.

Conclusions/Recommendations

This mooring is in satisfactory condition for continued use in its current capacity as a Class F mooring. However, the buoy should be refurbished.

LAT: 33 44 6274 LONG: 118 65 56 9 "	WATER DEPTH: 42 VISIBILITY: 1 BOTTOM TYPE: SALT SALL	GRIFFIN/HARDING (1336-1415 HZS) DIVERS SAKO/CICCONE (1456-1522 HZS)
	42' VISIBILIT	GRIFFINI/HI
LOCATION: MASS SEAL BEACH	WATER DEPTH.	
LOCATION	TYPE: A.Z.	J.A. THORL
MODRING NO. ETHE 1 CLASS. F	BUOY TYPE LE TEP (10 DIM) ANCHOR SIZE TYPE	DATE: 1 HE & SH ENGINEER IN CHARGE: J. A. THORETOR!

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						CONE	CONDITION				
100	COMPONENTS	GAUGE	TINK	SIN	SINGLE LINK %	NK %	DOO	DOUBLE LINK %		DEPTH	COMMENTS
		,	LENGTH	+06	+08	-08	+06	+08	-08		
	TOP 3 MALYE 34"								CPS CCTS		BUCY (SN 22) HAS 34 FREEKERARD.
	SPIDER 25 STORE							36-(3cm)	26-		LOWER KULD FENDER BAIRY
я д н 2, С	3/5 PEAR (4)							(BUY) - 91	-31		DETERICEATED. UNFR HUNDER
3	BOTTCH-31/2 DETACH										FEWDER AND CHAFILE STRIP ARE IN
	3 18 VEHR 2 S DETACH										GOOD CONDITION, HENNY KUST OR
	NEAR BUOY	224"	16/21	M			11/1/		28.	10,	SIDES OF BLOY, TOP HE DIE
RISER	MIDDLE			11			111		28'-	13,	CLIFS, ALD CHAFILE STLY CLIFS
	NEAR GRD RG	>	>	111			111		7.5 -	35'	THE PHEDES 34 1/3" x 3" (1850110)
GRC	GROUND RING	4/4"	× 162	14.51	10 30	12/5/DE DIMPIETER	£		68	40'	AKIT 40% OF ZING EKPENDED.
GEO. MID	UPPER END	34"	13%	100			1.1.1		(8'-	43.	ACCESSIONES PETWEEN DISER
LEG	MIDDLE										CHAIN AUD GAZUND AZNO- 3/3"
1100	ENTERS BOTTOM										DETACH 38" LAW DETACH 35"
CROUND	UPPER END	2%"	/5"	11/1/			111		83 42'	43'	DETPOH,
LEG	MIDDLE										
34h	ENTERS BOTTOM										GREEN'S RUS TO EACH PACHER CHILL
1326 3100	UPPER END	21/2"	ارکر/	11/11			10/01		78º	43 ¹	-32 43' 5.18.95/E1/18.4-34" SAHUKLE 3"C
166	MIDDLE										LINK, CALY TEP FEW LINKS CF
3460	ENTERS BOTTOM										EACH 166 VISIBLE

FOR ADDITIONAL LEGS USE OTHER SHEETS

SHEET / OF /

CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

ECHO TWO

Buoy

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This is a 10-foot-diameter peg-top buoy with a 3-foot freeboard. Its rubber fenders and chafing strip are in good condition. It has light rust on its sides and moderate rust on the buoy edges and top jewelry.

Riser Chain Subassembly

Some measurements near the middle and lower end of the riser chain were between 80 and 90 percent of its original 2 1/2-inch wire diameter. The ground ring was located at a depth of 40 feet.

Anchor Chain Subassemblies

Only the top few links of each anchor chain were visible before it entered the bottom. Although subassembly B measured greater than 90 percent of the original 2 1/2-inch wire diameter, the other two subassemblies measured between 80 and 90 percent.

Cathodic Protection

Only one anode, with about 40 percent of its zinc expended, was observed on the buoy. Underwater voltmeter readings measured the cathodic protection between -.96 volts near the anode and -.71 volts at the upper links of the anchor chain assemblies.

Conclusions/Recommendations

Although measurements of the anchor chain subassemblies taken during this inspection were between 80 and 90 percent, measurements taken during the 1982 inspection had subassembly measurements of less than 80 percent. Based on this data, the condition of the mooring is poor. However, due to its oversized chain, this mooring is in satisfactory condition for continued use in its current capacity as a Class F mooring.

LAT: 35 44 66,72, LONG: 1/8 65,45,1 16	ILITY: / BOTTOM TYPE: \$127/574 S	HARDING (GRIFFIL) (IIII - 1310 HRS) DIVERS: SAKO/CICCONE (1532 - 1410 HRS)
BEACH	42' VISIB	HARDING S. SAKO / C
LOCATION: MICH SEAL BEACH	WATER DEPTH: $\frac{42'}{}$ VISIBILITY:	
LOCATION: A	IN	IGE: 5, A. THURLTON
F	SIZE/TYPE: 1	CHARGE: 3,
2 CLASS:	IC'DIAMONCHOR	ENGINEER-IN-
MOORING NO : ECHC 2 CLASS:	BUOY TYPE: PEC TEP (12'DIMMENCHOR SIZE/TY	DATE: 1965 87 ENGINEERIN-CHARG

D

					j	COND	CONDITION				
O	COMPONENTS	GAUGE SIZE	LINK	SIN	SINGLE LINK %	% УГ	ססר	DOUBLE LINK %		DEPTH	COMMENTS
!			LENGTH	+06	±08	-08	+06	\$0÷	-08		
7	CP-34 PADEYE 34"								CPS VOVTS		BUY (Sh 138) HAS 3 FREEDHAD.
	SADER 312 33"							21,-1200	26-		RUBBLE FELDERS AND CHAFING
NAH S	STIDER, 2" PEAR(3)							(ALC+) -81	18-		STRIP IN GUD CONDITUR, LICHT
	BUTTOM- 3" PHDEYE										RUST W SIDES, HODERATE RIST
	235"SHACKLE										CH BUSY EDGES AND TOP TENEURY
	NEAR BUOY	3/2"	,91	111/1			111		1-74	1,8	CNE ALODE 36" x3" COSEFUED
RISER	MIDDLE			11/1/				111 - 79	_	36,	ABLUT HO TO EXPENDED.
	NEAR GRD RG	->	·>	1,1,1				11/1-175			
GRC	GROUND RING	17/4"	× 19"	11/5/1	E D	WSIDE DIAMETER	2/3		74	1,24	46' ACCESSIES BETWEEL PISER CHAIL
BRUCE	UPPER END	"6/E	15"	V://				1/1/	17	45,	43 AND GREAND RING - 3 DETACH,
LEG	MIDDLE										3"13 LWK 3"C FILK H"KHCC
140°	ENTERS BOTTOM										DETACH
CROUND GROUND	UPPER END	2 14.	13/2	, 1,1 A			1,00		-,73	4,2,	
LEG	MIDDLE										
2800	ENTERS BOTTOM										COUNT TOP FEW LIKES OF
VELTICALLY	UPPER END	"4%C	13/2	1.1				11.2 1.19	12.	4.21	42' EACH ALC'HER CHAIL
LEG	MIDDLE										Signsty Usible,
WICKIEN	NO C JAIC 旅ったれ ENTERS BOTTOM										

FOR ADDITIONAL LEGS USE OTHER SHEETS

A-21

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OF

SHEET

LOCATION: 1/2 5 1 AL BEACH LAT: 33 44 66.7 11 LONG: 115 65 45 1 W	WATER DEPTH: 42^{1} VISIBILITY: 1 BOTTOM TYPE: $5/L7/59L'D$			ENTS																				C 20 C 23310
4CH LAT 33 44'66.	VISIBILITY: 1 BO	ENGINEER IN CHARGE: J. A. THORNTON DIVERS: HARDING GRIFFIL		COMMENTS																				
BE	42	s: HA.		рертн											45									
-18	EPTH:	DIVER		% %	-08	でするいいんだっ									1111 -,69									
5 5	VTER DE	3		DOUBLE LINK %	\$0¢										,1,1,									
111	W	11.10	TION	DOO	+06																			
SATIONS	<u>F</u> 4	1401	CONDITION	* *	-08																			
707	TYPE: AIT	T.A.		SINGLE LINK %	80÷										 									•
F	:/TYPE:	RGE: 1	<u> </u>	SINC	+06										11/1/									
	OR SIZE	INCHA		I NK	LENGTH										13,7;									
CLASS	WKNCH	GINEER		GAUGE	1										21/4"									0
MODHING NO. ECHE 2. CLASS.	BUOY TYPE: PEC TOP (16 DIA) ANCHOR SIZEN			COMPONENTS							NEAR BUOY	MIDDLE	NEAR GRD RG	GROUND RING	UPPER END	MIDDLE	NO. D. LANGENTERS BOTTOM	UPPER END	MIDDLE	ENTERS BOTTOM	UPPER END	MIDDLE	ENTERS BOTTOM	
MOORING NO	BUOY TYPE:	DATE: 141'6 84		WOO		38	AWG	ядн	1 40	∩8		HISER		GROI		LEG	אס. ט אזיגיא	Control	LEG		G and	LEG	2	

CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT

ECHO THREE

Buoy

This is a 10-foot-diameter peg-top buoy. Its two rubber fenders and chafing strip are in good condition. There is some light rust on the fender clips. This buoy is in good condition.

Riser Chain Subassembly

All single- and double-link measurements were greater than 90 percent of its original 2 3/4-inch wire diameter. The ground ring was located at a depth of 39 feet.

Anchor Chain Subassemblies

All subassemblies are buried in the bottom and inaccessible for inspection.

Cathodic Protection

Two zinc anodes, about 50-75 percent depleted, were observed on the buoy. Underwater voltmeter readings measured the cathodic protection to be between -.98 volts at an anode and -.83 volts on the riser chain subassembly near the mud line.

Conclusions/Recommendations

This mooring is in satisfactory condition for continued use in its current capacity as a Class F mooring.

BOTTOM TYPE: SILT/SALD LAT: 33 44 65.74 LONG: 1/8 25 45, 24 (07/3 - 1002 HRS) WATER DEPTH: 40 VISIBILITY:) DATE: 1746 54 ENGINEERIN-CHARGE: J.A. THARDTOLD DIVERS. PHELPS IMAKN LOCATION: A'11'S SEAL MEACH 111 BUOY TYPE (FG TCP (16 DIAM) ANCHOR SIZE /TYPE: U MOORING NO. ECHO 3 CLASS:

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						COND	CONDITION				
100	COMPONENTS	GAUGE	LINK	SIN	SINGLE LINK %	% XV	noa	DOUBLE LINK %		DEPTH	COMMENTS
			LENGTH	+06	+08	-08	+06	÷08	-08		
17	10-3%" PAIXYE								203 VV475		BUSY (5/4 16) HAS TUN PUBBER
	234" STYDER							An. 12 - 18	- 38		FENDERS AND ONE CHAFILE RAIL
AAH 17.77.	RITCH-315" PANEYE							Bury - 90	J- 30		IN GOOD CONDITION. LIGHT RIST
٨٥	374"0 11015								İ		NOTED ON FENDER CLIPS, TWO
าย	3 1/3 "SHACKLE										21NC ANCIDES (34"x3"x3") ON G. CV
	NEAR BUOY	'nτ	162.	186			1.1/			,6	ABELT 52-75 % DEPLETED.
RISER	MIDDLE			1,44			11.11		125'-	71,	
	NEAR GRD RG	\	-	1111			1000		-,8.3	37,	-83 36 ACCESSIGIES BETWEEN RISER
GRC	GROUND RING	12"	1,31 ×	11.5.11	E Di	14'SILE DIGHERR	-78			34'	34' CHAID AND GREND KING - 2 /4"
BERE	UPPER END										DETACH, 3"3 LIUK, 3"0 LIKK, 415"
LEG	MIDDLE	D1.75	1/6/2								RACO DETRIH,
CYC'	ENTERS BOTTOM										
GROUND	UPPER END										GROUND RILG TO EACH HAUTHOR
LEG	MIDDLE	BIC	BLC/ED								CHAIN SUBASSENBIY- 4" NAVE
120	ENTERS BOTTOM										DETACH 21/2" PEARLILK 21/2"
BCL6	UPPER END										DETACH
LEG	MIDDLE	Pu'C	1, CLED								ALL PACHOR CHAIL SUB 1.35 CHOLLS
2.70	ENTERS BOTTOM										BURIED.

FOR ADDITIONAL LEGS USE OTHER SHEETS

CHESNAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

OF

SHEET

A-24

ALPHA ONE

Buoy

This is a 12-foot-diameter drum-type buoy. The buoy has a combination wood fender/chafing strip (60 percent deteriorated) covering the junction of the top deck and side. In addition it has two rubber fenders and two rubber chafing strips. About 20 percent of the top fender is missing. The buoy is fiberglass coated with some of the fiberglass worn off at the buoy edges. There is light rust bleeding on the top and sides. The top jewelry has heavy rust and pitting.

Riser Chain Subassembly

All single- and double-link chain measurements were between 80 and 90 percent of its original 2 3/4-inch wire diameter. The ground ring was located at a depth of 33 feet.

Anchor Chain Subassemblies

About 15-20 feet of each subassembly was visible before the chain entered the bottom. The upper and middle sections of the visible chain were measured to be between 80 and 90 percent of original 21/2-inch wire diameter.

Cathodic Protection

No cathodic protection system has been applied to this mooring.

Conclusions/Recommendations

The buoy needs to be refurbished. Otherwise, this mooring is in satisfactory condition for continued use in its current capacity as a Class E mooring.

LOCATION: N. 16.11 BEACH LAT 3844 01.32 LONG: 118 25 27 + 16 N. I WATER DEPTH: 42 VISIBILITY: 1 BOTTOM TYPE: 5727 SEX.13 (1334 - 1416 HES) DATE: 30 JULY SHENGINEER IN CHARGE: J. HORNTON DIVERS: 5AKO/PHELDS BUOY TYPE: DOUP (12) DIM! ANCHOR SIZE / TYPE: MOOHING NO. ALTHA 1 CLASS:

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						CONDITION	TION		<u> </u> 		
200	COMPONENTS	GAUGE SIZE	LINK	SIN	SINGLE LINK %	% X7	DOO	DOUBLE LINK %		DEPTH	COMMENTS
			LENGTH	+06	+08	-08	+06	+08	-08		
	OP. 34" SHORE(3)										TOP SELVELRY HAVE HEALY PITTED
	25" Rex (4)										AND CORRISION. FIBERGIASS
A 130TTC	OTTOH-3 "END HICK(3)										COATING WIREN OFF AT BLUY
	314 DETHUH										EDGES. THE PRICY HAS CREE
าย											WOUDER FENDER/CHAFINE STAID
	NEAR BUOY	224"	1,871		11/1			1/1/1		· 20	8' (CUSO DETERIORATED) ARRIVADITA
RISER	MIDDLE				1/1/2			11/1		251	15' JUNCTION CF TOP DECK AND SIDE.
	NEAR GRD RG	->	\rightarrow		11/11			111		32'	32' IN ADDITION, THE BUOY HAS TWO
GRC	GROUND RING	5/4	x 1512							33	RUBBER FENDERS AND TUBCHAING
BRAC	UPPER END	16"	15"		1/1/2		·	1///			STRIPS. ABOUT 30% OF THE TOP
LEG	MIDDLE				/ , s			1,1,1			FEL'DER 15 HISSA'6, THERE 15
1200	ENTERS BOTTOM			/^/^/			11/1			42'	LIGHT RUST BLEEDING CATHE
かえんら GROUND	UPPER END				/1,1,1			1,12			TEP AND SIDES.
LEG	MIDDLE				, , , , ,			1/1/1			GROWD PING TO EACH MUSTER
130	ENTERS BOTTOM			, , ,			1/1/			45'	CHAIL SUBASSENDLY-+ KACE
626	UPPER END				/ , 7 , 1			11/1			DETACH, 2% PENR 3" DETHCH.
LEG	MIDDLE				د د د			, , , ,			AROUT 15-20 OF EACH ANOTHER
376	ENTERS BOTTOM	>	\rightarrow	1 5 1			(1/1/2			13 1	43 CHAIN SUBASSEABLY VISIBLE.

FOR ADDITIONAL LEGS USE OTHER SHEETS

-- OF

SHEET

CHESMAVFACENGCOM REPORT FP0-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

ALPHA TWO

Buoy

This is a 12-foot-diameter drum-type buoy with a 5-foot freeboard. A combination wood fender/chafing strip covers the junction of the top deck and sides. This timber has grooves worn in it from the movement of wire ropes. There is no other fender on the buoy. The top tension bar padeye is severely corroded and worn. Buoy bottom has about 5 inches of marine growth.

Riser Chain Subassembly

The upper end of this chain is worn to between 80 and 90 percent of its original 2 1/2-inch wire diameter. The ground ring was located at a depth of 32 feet.

Anchor Chain Subassemblies

About 7 feet of subassembly A and 25 feet of subassemblies B and C were visible before the chains entered the bottom. The upper end of subassembly A was measured to be less than 80 percent of its original 2 1/2-inch wire diameter, while the other two legs are between 80 and 90 percent.

Cathodic Protection

Two anodes, about 50 percent depleted, were located on the buoy bottom. Underwater voltmeter readings measured the cathodic protection to be between -.85 volts at the top of the riser chain and -.77 volts at the upper end of the anchor chain subassemblies.

Conclusions/Recommendations

Because anchor chain assembly A measures less than 80 percent of original wire diameter, this mooring is in poor condition. Normally, a measurement this low of any component is cause for the mooring to be removed from service until

the unsatisfactory component is replaced. However, since the reduced wire diameter of subassembly A is still larger than that required for a Class F mooring (1 1/4 inches), this mooring is satisfactory for fleet use as long as it is not subjected to loads in excess of Class F load limits as defined in NAVFACENGCOM Design Manual DM-26.

MOORING NO. ALPHA 2- CLASS:	OCATION: KIL'S SEAL BEACH	.AT.33°44'C1.1" LONG: 118'C5'255"
BUOY TYPE: DCUH (13 DAHANCHOR SIZE/TYPE: 1	NZ WATER DEPTH: 42, VISIBILITY:	1 BOTTOM TYPE: 5/47/5/ALD
DATE: 30 JULY 84 ENGINEER IN CHARGE: J. A. THURNTON!		DIVERS, SAKO PHELPS (1441-1528 HES)

						COND	CONDITION					
OO	COMPONENTS	GAUGE	LINK		SINGLE LINK %	NK %	DOO	DOUBLE LINK %		ОЕРТН		COMMENTS
			LENGTH	+06	+08	- 08	÷06	+08	~08			
	CP. 174" SIDER										202 V.V.S	2005 BUCY (5/2 130) HAS A TELSON BAR
	2 1/2 " PEAC (2)											AND A S'FREE RIARD. CHE WENDEN
A PITCA	RITEM-34" END LUK											FENDER CHAFING STRIP CONERS
	2 34" ELD LIKK											TUNCTION OF THE TOP DECK ALD
	234" DETACH											SIDE, THIS STRIP HAS GREAUES
	NEAR BUOY	2/2"	1.5.		1111			11/1		8,	85	-85 WORN IN I FROM WIRE ROPES.
RISER	MIDDLE		-	1/1.			1.1				-3C	-80 THERE IS SEVERE CORRESCUL CF
	NEAR GRD RG	>	\rightarrow	111			111		!	3c'	18:	- 81 THE TEP PROEYE. TWO ANY DES
GRC	GROUND RING	5/2"	, 15 L	11.511	10 3	INSIDE DIPHETER	25			32'		(34 * 4 " 3") CH BIEY IXTTEN
CBOHNO	UPPER END	2/2"	1.5"			11/1/			1111		- 77	-77 AS WELL AS 5"CF HARINE
LEG	MIDDLE		4		111/			1/1/2/	7,7	777 4000	X	GROWTH.
K.	ENTERS BOTTOM			1/1/1			11/1			43'		ACCESSORIES BETWEEN RISER
GROUND	UPPER END				11/1/			111/1			-111	-77 CHAID AND GEOLUND PILE -31/4"
LEG	MIDDLE								251	25' TC 1307TEH	12H	DETACH, 3"END LICK, 31/4"CLICK,
3	ENTERS BOTTOM			7						42		4"RACO DETACH. GREULD RUG"
CROUND	UPPER END				1111			1777			-,78	-18 To EACH LEG -3 14" KHOW DETRY
LEG	MIDDLE			1					25/	16 61	161	25 TO BYTON 214" PEAR 234" DETRUIT TU
ر ا	ENTERS BOTTOM	→	-> 	11/2			1/1/1			43'		LEGS AZE CROSSED.

FOR ADDITIONAL LEGS USE OTHER SHEETS

A-29

OF

SHEET

ALPHA THREE

Buoy

This is a 12-foot-diameter drum-type buoy with a 46-inch freeboard. Its rubber fenders and chafing strip are in good condition. There is moderate rust on the top deck where the paint is worn off and some light rust on the fender clips and manhole covers.

Riser Chain Subassembly

Single- and double-link measurements of the riser chain were all greater than 90 percent of its original $2\ 1/2$ -inch wire diameter. The ground ring is lying on the bottom at a depth of 30 feet.

Anchor Chain Subassemblies

The three subassemblies are buried in the bottom and inaccessible for inspection.

Cathodic Protection

Two anodes, about 50 percent depleted, were observed on the buoy bottom. Underwater voltmeter readings measured the cathodic protection to be between -.86 volts near the middle of the riser and -.74 volts at the ground ring.

Conclusions/Recommendations

This mooring is in satisfactory condition for continued use in its current capacity as a Class E mooring. However, the buoy should be refurbished.

DATE: 31 JULY 84 ENGINEER IN CHARGE: J. A. THCRLITCIA DIVERS: HARDING/MANN (CP45-1015 HIS) WATER DEPTH: 32" VISIBILITY: 2 BOTTOM TYPE: 5/4 7/5/2010 LAT: 33 43 59 2 0 LONG: 118 25 2. 7 12 LOCATION: A'11'S SEAL BEACH BUOY TYPE: DRIH (12 DIAM) ANCHOR SIZE (TYPE: A'I W MOORING NO. PLFHH 3 CLASS

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						COND	CONDITION				
000	COMPONENTS	GAUGE	LINK	SIN	SINGLE LINK %	% YN	noa	DOUBLE LINK %		DEPTH	COMMENTS
			LENGTH	+06	80+	80-	+06	\$0¢	-08		
Tep.	cp. 3" Shiper								CPS 10475		Prey (5/2 146) HAS 3'10" FLETINGED
	1/2 "SHACKLE (2)										RUBBER FENDERS/CHAFING
A BYTTO	RUTCH-3" DETACH								-85		STRIP IN GEOD COUDITION.
	2"FEAR										RUST CAL TOP DECK WHERE PAINT
าย	3" DETACH										15 WORK CFF. LIGHT KIST CK
	NEAR BUOY	12/2"	15"	151			17.1			1,8	FENDER CHIPS AND MAKHULE
RISER	MIDDLE			1.1.1			11/1		78'-	,81	COUERS, TWO AKUDES(3 "4" "4")
	NEAR GRD RG	\rightarrow	\rightarrow	11/1			14.11		-83	766	27 ON BYTEM - ABUT SUR DEALTED
GRC	GROUND RING	4/2"	Kil"	D SID	IG DI	DSINE DIBMETER	6.2		h/:-	301	-74 30' G.R. LYING C.L. BOTTELL
	UPPER END										
LEG	MIDDLE	BIRIED	ED								GELLIND RING TO EACH ALCHER
Z. >	ENTERS BOTTOM										CHAIL SUBASSEMELY - 3 "NACE
GROUND	UPPER END										DETACH, 2/4"PEAR 2"," DETACH.
LEG	MIDDLE	BURYED	IED								
	ENTERS BOTTOM										LEGS APPEAR TO BEAR TO THE
ONLOGS	UPPER END										WORTH, AKOHER CHAIN
LEG	MIDDLE	BURIED	ED								SLB ASSEHBUIES ALT
3	ENTERS BOTTOM										LISIBLE (BURIED IN WOTEN)

FOR ADDITIONAL LEGS USE OTHER SHEETS

CHESHAVFACENGCOM REPORT FPO-1-84(29), "SEAL BEACH FLEET MOORING UNDERWATER INSPECTION REPORT."

OF

SHEET

ALPHA FOUR

Buoy

This is a 12-foot-diameter drum-type buoy. Its two rubber fenders and chafing strip are in good condition. The top tension bar eye is worn to almost 80 percent of its original wire diameter. There is some light rust on the top deck and heavy rust spots on the sides.

Riser Chain Subassembly

Single- and double-link measurements were all greater than 90 percent of original 2 3/4-inch wire diameter. The ground ring was located near the bottom at a depth of 24 feet.

Anchor Chain Subassemblies

About 10 feet of subassemblies A and B was visible but subassembly C is buried. Measurements of the visible chain were greater than 90 percent of original 2 1/2-inch wire diameter.

Cathodic Protection

Two anodes, about 20 percent depleted, were located on the bottom of the buoy. Underwater voltmeter readings measured the cathodic protection to be between -.85 volts on the buoy and -.77 volts at the upper end of anchor chain subassembly A.

Conclusions/Recommendations

This mooring is in fair condition and satisfactory for continued use in its current capacity as a Class F mooring. However, the buoy tension bar should be replaced.

MOORING NO. ALPHA ACLASS: E LOCATION: 1/11'S SEAL BEACH
TYPE: A'I
DATE: 31 JILY 84 ENGINEER-IN-CHARGE: J. A. THOCKTOL

						COND	CONDITION				
COM	COMPONENTS	GAUGE SIZE	LINK	SIN	SINGLE LINK %	% XI	DOO	DOUBLE LINK %		D EРТН	COMMENTS
			LENGTH	+06	80+	-08	+ 06	+08	-08		
16.1	r-34" SPIDER								CPS V:HTS		Becy (5/4/40) HAS The R. WER
	3/4" (FAC (3)								-85		FELDERS ANDA RUBBER CHAFAGE
ЯАН											STRUP TOP PADÉYE WITH TO 21%
٨٥١											CF CRIGINAL DIAMETER LIGHT
าย											RUST ON THE DECK, HEALY RUST
	NEAR BUOY	1. 1 to	,, 7, 71	111			11/1			2,	STOTS CH SIDES, TW. ALKOES
RISER	MIDDLE			111			110		784	16,	(3" 4" 4") ON BUNY PUTTOH.
	NEAR GRD RG			1:11	-		1.7.1			22'	AKODES AKKUT 20% DEPLETED,
GRO	GROUND RING	<i>"</i> #	,, 61×	WSOF.	DIA	SADE DIGITIES	0.1			24'	24' ARCESSORIES BETWEEL RISER
	UPPER END	3/3"	15"	1111			1.1.1		77 25'	25'	CHAID AND GREEKED RIEG-21/3"
LEG	MIDDLE							10,70	10' TO 12.TTOH	¥	DETACH 3 1/2 BLINK 21/2 CLINK
¥ .	ENTERS BOTTOM		,								4" LACO DETACH,
GROUND	UPPER END	2/2	15"	1/1/1			/ / //			25'	LIGHT TO MODERATE RIST CK!
LEG	MIDDLE							10,10	10' TO BETTY	У.	FEYDER CLIPS, GRIUD RING.
	ENTERS BOTTOM										TO EACH ALPCHOK CHAIL?
CROUND	UPPER END			-							RIBASSEMBLY - 4"KAREN DETACH
LEG	MIDDLE	61.6	IEI								2/3" FEAR 2/3" DETACH.
۲. رو د	ENTERS BOTTOM										GRUNDLEG & BIRIED

FOR ADDITIONAL LEGS USE OTHER SHEETS

A-33

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SHEET

ANNEX B

SURVEY OF SEAL BEACH

FLEET MOORINGS

SEAL BEACH

CONTROL POINT DESCRIPTION

(see figure B-1)

- Station #1 This station is located between Anaheim Bay and the protected anchorage on the spit of land to the northwest of the channel entrance into Anaheim Bay. The marker is a bronze metal disk in the concrete designated T1001.
- Station #2 This station is located between Anaheim Bay and the protected anchorage on the spit of land to the southeast of the channel entrance into Anaheim Bay. This marker is a temporary orange survey marker implanted but not placed in concrete. It is 500 feet southeast of Station #3 which is a permanent marker. The orange marker is on the protected anchorage side of the spit.
- Station #3 This station is on the southeast spit of land from the channel entrance into Anaheim Bay. The marker is at the end of the spit near the channel entrance and more to the bay side. It is a permanent marker placed in concrete and designated 196.
- Station #4 The station is a temporary marker made by the survey team. It is located on the northwesterly most pier in Anaheim Bay at the Weapons Station. The chiseled "X" is on the left of the pier when facing the bay and marked UCT-2 STATION #4 in orange paint. The pier is southeast of the boat ramp.
- Station #6 The station is a permanent marker on the southeast side of the bay. The marker is designated U1001 and is on the southeast corner of the ship unloading pier close to the water.

The listed stations do not have horizontal control. It was necessary to use the Seal Beach North Water Tank located in the administrative area of the depot, designated Building 207, and the Seal Beach Navy Radar Tower located near the demolished bridge on old Anaheim Bay Road, designated Building 360, as horizontal control points.

FIGURE B-1. SEAL BEACH CONTROL POINT LOCATIONS

SEAL BEACH SURVEY DATA

Control Points	Designation
Station 1	T1001
Station 2	Orange Marker
Station 3	196
Station 4	UCT-2 marker on pier chisel X
Station 6	U1001

BL = Station 1 to Station 2

	Angle	from BL		
Buoy	#1	#2	LATITUDE	LONGITUDE
Oscar 1	85.12°	297.36°	33°43'41.9"N	118°05'50.2"W
Oscar 3	66.67°	303.82°	33°43'50.1"N	118°05'42.6"W
Oscar 5	60.07°	285.30°	33°43'45.5"N	118°05'39.7"W
Oscar 6	106.67°	325.68°	33°43'53.6"N	118°05'51.9"W
Oscar 7	106.67°	318.62°	33°43'49.8"N	118°05'55.2"W
Oscar 8	106.88°	313.53°	33°43'45.9"N	118°05'58.7"W
Alpha 1	345.97°	90.12°	33°44'01.8"N	118°05'27.4"W
Alpha 2	348.05°	118.83°	33°44'01.1"N	118°05'25.5"W

BL = Station 1 to Station 3

	Angle from BL			
Buoy	#1	#3	LATITUDE	LONGITUDE
Oscar 2	86.90°	292 . 77°	33°43'45.3"N	118°05'40.5"W
Oscar 4	48.57°	283.62°	33°43'54.4"N	118°05'37.5"W

SEAL BEACH SURVEY DATA (continued)

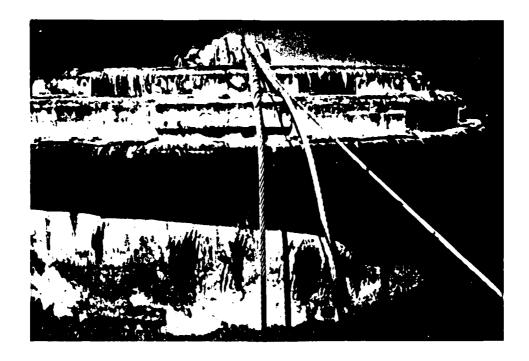
BL = Station 1 to Station 4

Water Tower

	Angle from BL			
Buoy	#1	# 2	LATITUDE	LONGITUDE
Echo l	284.49°	36.10°	33°44'07.7"N	118°05'50.9"W
Echo 2	295.49°	24.92°	33°44'06.7"N	118°05'48.1"W
Echo 3	310.64°	12.33°	33°44'05.7"N	118°05'45.2"W
BL = Station	4 to Station 6			
	Angle	from BL		
Buoy	#1	#2	LATITUDE	LONGITUDE
Alpha 3	13 . 87°	266 . 72°	33°43'59.0"N	118°05'20.7"W
Alpha 4	9.60°	255 . 32°	33°44'02.0"N	118°05'19.5"W
BL = Station	1 to Station 6			
	Angle	from BL		
Buoy	#1	#2	LATITUDE	LONGITUDE
S. B. Navy Radar Tower	32.35°	241.21°		
S. B. North	301.25°	102.06°		

ANNEX C

PHOTOGRAPHS



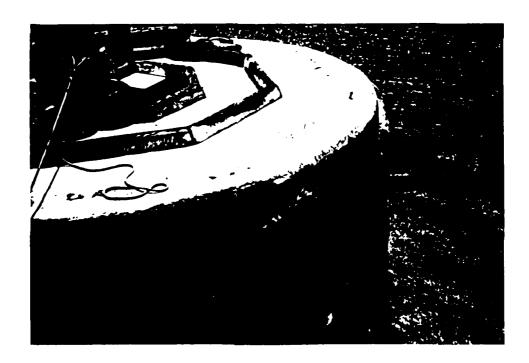
OSCAR 2. Lower Fender Badly Deteriorated. Deap Scratches and Rust on the Sides.



OSCAR 3. Top Padeye and Jeweiry Severely Worn.



Oscar 5. Buoy Listing Severely, Marine Growth on Top of the Buoy.



ALPHA 1. Rubber Fender Torn Away from Sides. Outer Deck-Edge Chafing Strip Missing.

ANNEX D

PRELIMINARY INSPECTION REPORT

RCUTINE

F 2418327 AUG 84

FM CHESNAVFACENGOUM WASHINGTON LC

TO KPINSTA SEAL BEACH CA

TAFE COMMANDACENGEON ALEXANDRIA VA CEMCEPAC PEARL HARDOR HI NESTRANDACENGEON SAN BRUND LA DET TAG

BT LNCLAS //N11400//

SURJ: FLEET MOURING INSPECTION

- 1. A CHESTIVABLE TWO UNDERWATER INSPECTION OF THE FLEET MOURINGS AT WENSEA SEAL BEACH WAS COMPUCTED DURING THE PERICO OF 30 JULY TO 2 ACC. TO 1974. THE FULLOWING IS A PRELIMINARY REPORT OF THE RESILET AS RELATED IN A PHONOUN RETWEEN MS. S. FUGICKA, WHYSTA SE L FEACH. AND MR. J. THURNTON, CHESDIV, ON 22 AUG 1984.
- 2 MOORTMGS OSCAR -2, -3, AND -4 ARE IN POOR CONDITION AND UNSATISTACTURY FOR FLEET USE BECAUSE OF WEAR IN THE CHAIN TOP JEWELRY ON THE BUCY.
- 3. MOCHINCS ALPHA -2 AND ECHU -2 ARE IN FOUR CUMUITION BECAUSE OF CH IN MEAN. HOWEVER, THESE MUDRINGS ARE SATISFACTORY FOR THEIR REPORTED USE OF CLASS E AND CLASS F RESPECTIVELY.
- 4. THE FULLOWING MOORINGS ARE IN FAIR CONDITION BUT ARE SATISFACTURY FOR THEIR REPORTED USE:
 - A. OSCAR -1, -0, AND -8, AND ALPHA -1. -3 AND -4 ARE SAT FOR C_ASS E.
 - B. ECHU -1 AND -3 ARE SAT FOR CLASS F.
- D. MUDRING OSCAP -5 IS IN FAIR CUNDITION ACCORDING TO CHAIN FEASUREMENTS. HOWEVER, THE BUDY IS LISTING SEVERELY AND ITS USE SHOULD BE RESTRICTED UNTIL THE CAUSE OF THE LIST HAS BEEN CETERMINED.
- 6. MODRING OSCAR =7, IS IN GUOD CONDITION AND IS SATISFACTORY FOR LASS E USE. HUMEVER, THE BUDY IS LISTING AND ITS USE SHOULD BE .IMITED UNTIL THE CAUSE OF THE LIST HAS BEEN DETERMINED.
- Lyp: CHESNAVFACENGOOM WASHINGTON UC(9)...URIG

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7. REPORT OF THE FIMAL EVALUATION WILL FULLOW. FOR AT THIS CLUBAGO IS U. PENNINGION AT (202) 433-6600 UR AVV 268-6000 PT

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